Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Long Branch Lake

Waterbody Segment at a Glance:

County: Macon
Nearby Cities: Macon
Area of impairment: 2430 Acres
Pollutant: Cyanazine
Source: Corn and sorghum production

Note: This reservoir is proposed for deletion on the 2002 303(d) list. It is also being added to the list for mercury (See the Mercury Info Sheet).

TMDL Priority Ranking: High

State map showing location of watershed

Description of the Problem

Beneficial uses of Long Branch Lake:

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption
- Boating and Canoeing
- Drinking Water Supply
- Whole Body Contact

Use that is impaired

- Drinking Water Supply

Standards that apply

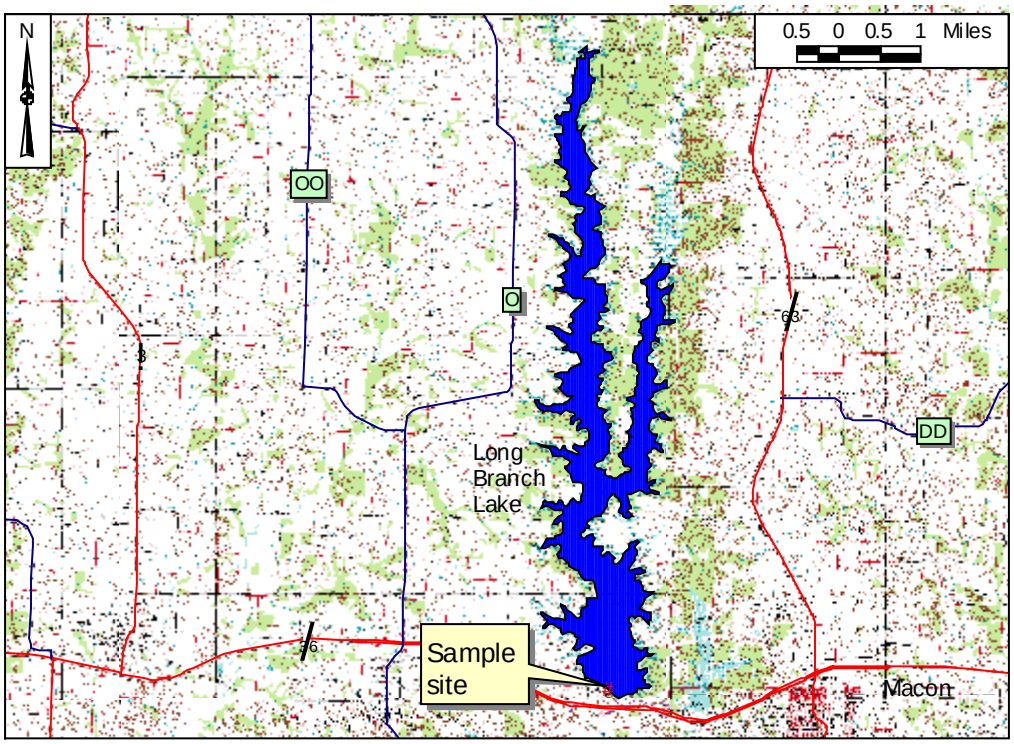
The impairment of this lake is based on exceedence of the general criteria contained in Missouri's Water Quality Standards. The general criteria state:

- Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. 10 CSR 20-7.030(3)(D)

Long Branch Lake was formed in 1980 by damming the East Fork of the Little Chariton River. Its watershed comprises 66,400 acres. The watershed is primarily agricultural with 29 percent cropland, 39 percent grassland, 27 percent forest, 4 percent water, and 1 percent urban. Major crops include corn, soybeans and wheat, with no-till operations predominating. The lake surface totals 2,400 acres. Long Branch Lake is a drinking water source for the city of Macon. Cyanazine is an agricultural herbicide that was used from 1971 to 1999, when its manufacturer voluntarily withdrew

it from production. At one time it was the fourth most widely used synthetic chemical pesticide in U.S. agriculture, applied to corn, cotton and sorghum crops to control broadleaf weeds. It is relatively persistent in the environment, and under certain conditions will remain at significant levels in surface water for over one year. It has been identified as a surface water contaminant in 30 states, including Missouri. Cyanazine was withdrawn from use after being linked to a range of adverse health effects, including respiratory distress, cerebral palsy and impaired fetal development. In recent years, concentrations of cyanazine in Long Branch Reservoir have been found to frequently exceed the federal health advisory level, which is 1 microgram per liter (µg/L). However, sharp declines in cyanazine in the reservoir in the last two years has brought the long term average down to 0.82 µg/L, and the reservoir is proposed for deletion from the 303(d) list The following information contains a map of Long Branch Lake area and the existing data.

Map of Impaired Portion of Long Branch Lake Showing Sampling Site Location



Yearly Cyanazine Levels in Long Branch Lake, 1996-1998
(µg/L)

Year (months)	Average	Range
1996 (4, 6-8)	1.46	0.59-2.28
1997 (5-8)	1.56	0-2.27
1998 (4-9)	0.84	0.8-1.15

Source: Kansas City District, U.S. Army Corps of Engineers

Monthly Cyanazine Levels in Long Branch Lake, 1996-1998
(µg/L)

Month (years)	Average	Range
April (1996, 1998)	1.0	0.96-1.03
May (1997-1998)	0.74	0.51-0.96
June (1996-1998)	0.43	0-0.71
July (1996-1998)	1.88	1.15-3
August (1996-1998)	1.7	0.93-2.27
September (1996, 1998)	1.54	0.8-2.28

Source: Kansas City District, U.S. Army Corps of Engineers

Cyanazine Levels in Long Branch Lake, 1997-2000
(µg/L)

January, 1997	2.3
April, 1997	0
May, 1997	0.55
June, 1997	0
July, 1997	2.44
September, 1997	2.57
November, 1997	1.85
January, 1998	0
March, 1998	1.73
May, 1998	0.5
December, 1999	0
March, 2000	0
June, 2000	0
September, 2000	0

Source: Missouri Dept of Natural Resources

For more information call or write:
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